

REMARKS

The Examiner has objected the drawings as numbering of the views must be preceded by the abbreviation 'FIG' and should correspond with the description in the Specification.

The applicant has amended the figures accordingly. Replacement photographs are provided in duplicates herein.

The Examiner attached a reference from The Royal Horticultural Society Dictionary of Gardening disclosing an *Ananas comosus* cultivar named 'Honey Gold'. The Examiner states that reuse of the cultivar name 'Honey Gold' is inadmissible under at least Article 48, 50 and 51 of the International Code of Nomenclature for Cultivated Plants.

Article 48 states that re-use of a previously utilized cultivar name may be permitted by the registration authority only if the registration authority is satisfied that the original cultivar is no longer in cultivation, has ceased to exist as breeding material or in a gene or seed bank, and is not an important component in the pedigree of other cultivars.

The applicant respectfully requests the Examiner to accept use of the name based on the following statements and the enclosed expert declarations of Dr. Christopher Whitehouse, botanist from the Royal Horticultural Society; Dr. Kenneth G. Rohrbach, world widely respected specialist of pineapple research and; Mr. Michael Montembeau, intellectual property counsel of Nerac Inc.

Royal Horticultural Society is the leading horticultural organization in the world. The Society is the International Registration Authority for more categories of plants than any other organization throughout the world. The horticultural library of the Society is one of the bests in the world and the databases of the Society cover several tens of thousands of cultivars from all over the world. Dr. Christopher Whitehouse has made all the efforts

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available to him as a botanist of the Royal Horticultural Society and having access to all the databases of the Society to trace the origin of the reference to pineapple 'Honey Gold' in the RHS Dictionary of Gardening. All his attempts have failed; he was unable to find any citation to a pineapple variety called Honey Gold and no information as to the origin and existence of the variety cited in the dictionary. This is to be interpreted so that a cultivar with the name 'Honey Gold' has not been offered for sale by any nursery that has submitted its lists to the RHS since 1987. As the cultivar name has neither been cited in any of the previous Journals of the Society, Dr. Whitehouse does not consider likely that it would be an old cultivar. Based on the efforts of Dr. Whitehouse it does not seem likely that the name 'Honey Gold' has been used for pineapples in commerce. The cultivar most likely is not an important component in the pedigree of other cultivars.

In addition to the search done by Mr. Whitehouse, Information Specialist of Nerac Inc., a company that has provided information searches for 38 years, created three strategies to search term 'Honey Gold' associated with pineapple cultivars. The databases Mr. Montembeau searched included various international and domestic databases, such as patent and trademark databases, Biological Abstracts, CAB Abstracts- Agriculture, Dissertation abstracts. The searches also covered various Nerac's internal technical, patent, business and news related databases. None of the searches associated the term 'Honey Gold' with pineapples other than those in connection with Del Monte company. Based on the information returned by the searches, Mr. Montembeau regards it unlikely that the name Honey Gold would be in use with any pineapple cultivar in commerce during the period of time covered by the databases searched, other than the pineapple developed by Del Monte.

Even further, the applicant attaches herein a declaration by Dr. Kenneth G. Rohrbach. Dr. Rohrbach is world known expert of pineapple research. Recently he co-edited a comprehensive textbook on pineapple production and uses (Bartholomew et al. (2003):

the Pineapple. Botany, Production and Uses, CABI Publishing). Dr. Rohrbach is extremely well known among pineapple breeders and researchers around the world. As evidenced by his CV attached to the declaration, Dr. Rohrbach has published a vast number of internationally recognized scientific publications on various aspects of pineapple cultivation. Dr. Rohrbach's understanding is that the reference in the Royal Horticultural Society dictionary to variety 'Honey Gold' refers most probably to a cultivar that has been used by hobbyist for greenhouse cultivation in England sometime during 18th and 19th centuries. Dr. Rohrbach doubts that there is any possible way to determine which current variety of pineapple might be the same as the 'Honey Gold' cited in the Royal Horticultural Society dictionary. Dr. Rohrbach, the world known specialist of pineapple cultivation, has never in his life heard of a pineapple variety named 'Honey Gold' and he does not know any commercial variety anywhere in the world with that name.

Based on these expert declarations the applicant request the Examiner to reconsider allowability of the use of the name 'Honey Gold' as clearly there is no other pineapple variety that carries the same name, nor is there any indications of such a variety being available as breeding material or in gene banks. Rather, it seems that the reference to 'Honey Gold' pineapple in the Dictionary of Royal Horticultural Society referred to some cultivar that was used by hobbyist in England very long time ago and that this variety does not exist anymore and it has not been used as breeding material for the presently known pineapple varieties.

- B. Applicant has amended the application so as to delete double quotation marks and the application as amended now refers to cultivar name with single quotation marks as required by the Examiner.
- C. The Examiner states that on page 1, line 10-13, the recitation regarding the origin of the instant cultivar is unclear. The breeding technique used was mass selection with the parent population of Tainung 11. Applicant has amended the description of the

breeding technique on page 1 lines, 16-20. Applicant believes that the description as now amended is clear as to the origin of the instant cultivar.

- D. The Examiner requests the applicant to recite whether the parent cultivar 'Tainung 11' has been patented in the United States, is currently the subject of pending U.S. plant patent application or is non patented. The cultivar 'Tainung 11' is not patented and the applicant has inserted the word 'non patented' after the cultivar name in the amended specification as required.
- E. The Examiner states that the specification does not particularly point out where the variety of plant has been asexually reproduced. The variety has been asexually produced in Pindeco Buenos Aires Puntarenas, Costa Rica. Applicant has amended the specification to specifically point this out (amendment on page 1, line 19; page 1, line 30).
- F. The Examiner requires that the age of the observed plant should be disclosed in the specification. The harvest of the plants was 354 days after planting. The applicant has amended this onto page 3, line 17 and also the applicant has amended the description of Fig. 6 so that it includes the age of the plants (page 2, line 29).
- G. The Examiner states that the applicant must set forth in the specification a brief description how the new variety is distinguished from related known cultivars. The applicant has amended the specification by adding comparison of characters of 'Honey Gold' with other pineapple varieties on page 10-14. Specifically Table 2 on page 11 compares pest and disease resistance/susceptibility of varieties. Table 3 on page 12 compares physiological characters of the varieties and Table 4 on page 13-14 compares several characters of the varieties. Table 4 also gives comparison of 'Honey Gold' and the closest relative Tainung 11.

- H. The Examiner states that on page 2, line 23 the recitation “shows a mature plant, with three or less slips’ does not correspond with the attached photograph of “number 5 ‘Honey Gold’ pineapple fruit” The examiner correctly states that number 5 appears to show a side view of a single pineapple fruit. The applicant has corrected the unintended mistake and added the missing figure text for figure 5 (page 2, lines 27-30).
- I. The examiner states that on page 3, line 23 the genus and species should be italicized. The applicant has made the required correction.
- J. The Examiner states that applicant should set forth in the specification a brief description of photograph number 6. Additionally, the examiner states that it is unclear if “MA-2” is the breeder’s reference number of the instant cultivar or if it is another variety of pineapple. Clarification and corrections are required. The applicant has amended the application with description of photograph number 6. MA-2 is the breeder’s reference number and the applicant has amended the Figure text on page 2, line 30 to clarify this.
- K. The Examiner requires correction on page 4 line 10 to recitation 5 y 7.4.as it is unclear relative to the diameter of the stem. The applicant has corrected the wording as required (page 4, line 18).
- L. The Examiner states that the applicant should set forth in the specification the color designation of the stem with reference from the employed color chart. The applicant has amended the application as required (amendment on page 4, line 20).
- M. The Examiner states that the applicant should set forth in the specification floral bract’s size, margin type and color designation with reference to the employed color chart. The applicant has amended the application as required (amendment on page 6, line 25).

- N. The Examiner states that the recitation 'reddish green' on page 6 line 10 is vague regarding the color designation of the terminal crown leaves. To address this issue the applicant has amended the specification by setting forth the color designation with reference to the employed color chart of the terminal crown leaves (amendment on page 6, lines 9-10).
- O. The Examiner states that the applicant should set forth in the specification the terminal crown leaves average size, number and margin type. The applicant has amended the application as required (amendment on page 5, 26-27).
- P. The Examiner states that the recitation 'light lilac' on page 6 line 14 is vague regarding the color designation of the petal. To address this issue the applicant has amended the specification by setting forth the color designation with reference to the employed color chart of the petals (amendment on page 6, lines 23.).
- Q. The Examiner states that the applicant should set forth in the specification a botanical description of the sepals such a as size, shape and color designation with reference to the employed color chart. The applicant has amended the specification as required (amendment on page 6, line 24).
- R. The Examiner states that the applicant should set forth in the specification the fruit core's diameter and color designation with reference to the employed color chart. The applicant has amended the application as required (amendments on page 6, line 31and page 7, line 9).
- S. The Examiner states that the applicant has to set forth in the specification the average height and diameter of the fruit. The applicant has amended the application as required (amendment on page 7, lines 2-3).

- T. The Examiner states that the recitation “14/3% on page 7, line 29 is unclear regarding the Brix of the claimed plant. The applicant has corrected this typo.
- U. The Examiner states that the recitation ‘original population’ on page 7, line 30 is unclear relative to the comparison of the ascorbic acid levels. The applicant has amended the application to clarify the meaning of ‘original population’ (amendment on page 8, lines 16-17).
- V. The Examiner states that on page 8, lines 2-3 the recitation ‘these characteristics of the Honey Gold plant have been stable and it is anticipated that they will be consistently expressed in future generations’ is vague because it is uncertain whether the claimed plant is stable and reproduced true to type in successive generations of asexual reproduction. The applicant has amended the application as to address this issue (amendment on page 8, lines 18-20. The applicant has also amended Table 1 to show stability of the variety.
- W. The Examiner states that if additional information is available relative to plant/fruit disease and pest resistance/susceptibility such should be set forth in the specification or if not observed the applicant should state ‘non observed’. The applicant has amended the application as required (amendment on page 7, lines 17-20). The applicant has also provided Table 2 to compare the susceptibility characters of other pineapple varieties to those of ‘Honey Gold’. Table 3 gives comparing data on resistance/susceptibility to dehydration spots, brown spots and fruit fermentation characters of ‘Honey Gold’ and ‘MD2’ varieties.
- X. The Examiner states that the claim must be drawn to entire plant. Applicant therefore should insert the word ‘plant’ after *Ananas comosous*. The applicant has made the correction as required.

The Examiner still states that applicant should carefully compare the claimed plant with the botanical description set forth in the specification to ensure completeness and

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accuracy and to distinguish the plant within this expanding market class. Any further botanical information should be imported into the specification, as should any additional or corrected information relative to same. The applicant has amended the specification as to reply the issues stated by the examiner (A to X) and the applicant believes that the application as amended is a complete and adequate to describe the cultivar. Therefore the applicant believes that the specification as amended gives a clear and complete description of the pineapple plant called 'Honey Gold' and the applicant respectfully requests reconsideration of allowance of claim 1.

Yours truly,



John Dodds

Reg. No. 45533

Cc. File

Del Monte Fresh Produce

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IN THE DRAWINGS

Please, replace the original figures with the replacement figures attached herein. The applicant has marked the figures as required by the Examiner. The replacement figures are provided here as duplicates.

PLANT PATENT APPLICATION

Title: Pineapple plant named “Honey Gold”

Inventors: MORALES, Juan Luis; SAUTER, Hans; YOUNG, Thomas R.

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Latin name: Ananas comosus

Variety denomination: ‘Honey Gold’

10 BACKGROUND OF THE INVENTION

The present invention comprises a new and distinct pineapple variety of *Ananas comosus*, hereinafter referred to by the variety name “Honey Gold”. The variety has been developed by using clonal selection within the parent population. The process started at 15 the end of 1997 using material from the hybrid Tainung 11 (also known as Perfume pineapple in Taiwan) (non patented). The original seedlings were asexually reproduced using stem cuttings and crowns (asexual seeds). The pineapple plant ‘Honey Gold’ was developed through mass selection at the research area of Corporacion de Desarollo Agricola Del Monte, S.A. Pindeco, Buenos Aires-Puntarenas, Costa Rica. The process of 20 mass selection took five years of consecutive plantings and selections.

The plant is under cultivation in the research area of Corporacion de Desarollo Agricola Del Monte, S.A. (PINDECO), since it was brought to Costa Rica at the end of 1997. The original seedlings were asexually reproduced using stem cuttings and crowns.

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The main objective of the selection program, was to obtain a pineapple variety with a nice tasting fruit, that would keep the original aroma, with fruit of an appropriate size and shape, but distinguished for having a higher concentration of ascorbic and citric acid, brix or soluble solids, an fewer plant slips, with respect to the parental line.

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Personnel of PINDECO’s Research Department in Buenos Aires-Puntarenas, Costa Rica, have developed this new plant. From a group of 19 crowns (asexual seeds) (original

Honey Gold Pineapple substitute specification; marked-up- version

parental population) obtained through Del Monte Fresh Produce personnel in Hong Kong, the process of sowing began in Buenos Aires Puntarenas, Costa Rica, by selecting the plants with better characteristics through three generations.

- 5 The clone selected after all this effort, resembles the original parental material, but it is distinguished by its higher sugar (TSS), citric acid, ascorbic acid levels, and also by the fewer slips per plant and fewer spines in the leaves.

SUMMARY OF THE INVENTION

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The invention relates to a new and distinct variety of the Bromeliaceae, or pineapple family, which was derived by clonal selection from the hybrid Tainung 11, or Perfume pineapple, after continued five year selection and reproduction effort.

- 15 The new plant variety is characterized by smooth leaves, with occasional presence of spines on the leaf tips; by the reduced number of slips and the higher citric acid and ascorbic acid levels, and the higher soluble solids content of the fruit flesh, when compared with the parental line. The fruit is cylindrical to conic in shape, of medium size, and very resistant to skin dehydration damage. Mature fruit has an intense yellow
20 color and a strong and sweet aroma, and a wonderful taste, characteristic of the parental line. It is susceptible to chill damage (or internal browning). Even in the absence of refrigeration, the shelf life of the fruit is very long, when compared with other varieties as evidenced by less fruit fermentation, dehydration and brown spots. This new variety produces moderate yields of fruit, best suited for the fresh market.

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BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1. Shows the lateral view of a plant and root system against a metric ruler.

Fig. 2. Shows a "Honey Gold" plantation.

- 30 Fig. 3. Shows an overhead view of a "Honey Gold" plant.

Fig. 4. Shows a close-up of an immature fruit.

Honey Gold Pineapple substitute specification; marked-up- version

Fig. 5. Shows a close-up of a mature fruit~~mature plant, with three or less slips.~~

Fig. 6. Shows a mature plant with three or less slips. Age of the plant is 354 days after planting. MA-2 is breeder's number.

5 BOTANICAL DESCRIPTION OF THE PLANT

The following detailed description of the new variety is based on observations of well fertilized specimens which were grown under field conditions, in the Buenos Aires region, Costa Rica, at 350msnm, where temperatures generally range from 14°C to 37°C, and annual rainfall averages 3251 mm.

The plants were grown at PINDECO, the Del Monte Fresh Produce research facility in Buenos Aires-Puntarenas, Costa Rica.

15 Color terminology and color designations reported herein are in accordance with Munsell Color Notations for plant tissues published by Munsell Color Macbeth, a division of Kollmorgen Corporation, Baltimore, Maryland, USA.

20 The following description was taken at harvest beginning of 2003, of the general population of this new variety, which was sowed from asexual seed. The harvest was 354 days after planting.

Plant Identification

25 Name: Ananas comosus

Parentage: Tainung 11 (Perfume pineapple).

Origin: Clonal selection, through 5 years of consecutive selections and reproductions
30 (three generations).

Honey Gold Pineapple substitute specification; marked-up- version

Classification:

- I. *Botanic:* Bromeliaceae or pineapple family. Subfamily: Bromelioideae. Genus: Ananas. Subgenus: comosus. Variety: ‘Honey Gold’.

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- II. *Commercial:* Bromeliad fruit plant.

Form: Terrestrial (in cultivation), with overlapping sessile leaves from a funnel-formed rosette, surrounding a composite inflorescence (during anthesis) and with 0 to 3 slips in
10 the fruit peduncle that initiate before anthesis, and dominant suckers that are produced in the stem and originate subsequent crops.

General Description. ‘Honey Gold’ (Before anthesis)

15 Stem

- I. *General.* Short, upright and sheathed by overlapping leaves, each leaf with a dormant axillary bud.

- II. *Stem texture.* Glabrous and fleshy.

20 III. *Stem size.*

- A) Length (above soil level): Usually between 8 and 15.5 cm at anthesis.

- B) Diameter between 5 yand 7.4 cm at soil level at anthesis.

- IV. *Stem shape.* Cylindrical and with a narrower diameter at the distal part.

V. Stem color 7,5 GY 7/1

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Leaves:

I. *General.* Closely overlapping sessile leaves (formed in acropetal succession) forming a dense rosette, the outline of which in longitudinal section is roughly heart shaped. The number of leaves fluctuates between 28 and 57 with a 5/13 phyllotaxy.

Honey Gold Pineapple substitute specification; marked-up- version

II. *Texture.*

- A) Upper epidermal area: Glabrous, semi-rigid and channeled (or concave) except at the leaf tip.
C) Lower epidermal area: Finely striated (longitudinally) and appears covered with white layer consisting of scale-like trichomes.

5 III. *Leaf arrangement.* Alternate and in rosette shape.

IV. *Leaf margins.* Plane, with rarely found irregularly spaced small deltoid-cuspidate hooked spines usually located on the distal portions of leaves.

V. *Leaf venation.* Parallel

10 VI. *Leaf shape.* Leaves are not uniform in shape and vary with the position of the leaf on the stem. The basal or oldest leaves are lanceolate while the base is considerably expanded. There is a noticeable narrowing in width between non-chlorophyllous (basal) and chlorophyllous (or main portion) of the leaves. The longest or most mature leaves are lanceolate in form but the base is without the 15 arcuate expansions of the preceding leaves. The remaining leaves (or center leaves of the plant rosette) are lanceolate in form with no expansion of width into the base.

VII. *Leaf size (at anthesis)*

20 A) Length: Usually between 69 and 85 cm for those leaves originating from the medium part of the stem with a non-chlorophyllous base that usually is between 2.6 and 6.4 cm of length.

B) Width: Normally between 4.1 and 6.0 cm in the mid leaf area of the longest leaves. The expanded basal disk usually has a maximum width of 7.5 to 10 cm.

25 C) Thickness: In the longest leaves, usually vary between 1.6 to 2.4 mm at the center of the mid leaf area and decreased laterally between 0.8 and 1.5 mm at the margin, while becoming slightly thinner at the tip. The expanded basal disk at the mid stem area usually has a maximum thickness of 1.5 to 3.8 mm at the center of the blade and tapering laterally toward margins up to 0.36 to 1.28 mm.

D) Terminal crown leaves: average size 9.4 cm, number 77; and margin type smooth.

Honey Gold Pineapple substitute specification; marked-up- version

VIII. *Color.*

- A) Upper epidermal surface: 1. General: Color is usually dominated by yellowish green, olive green, and reddish green. The color of the basal disk is dominated by a white hue and light yellow. 2. Chlorophyllous basal disk area: Commonly light yellowish (5Y 8/1, 5Y 8/2). 3. Mid leaf area: Commonly olive green (7.5 GY 5/4, 5R 3/4). 4. Leaf tip area: Commonly olive gray (5.0GY 6/4) reddish purple (5.0RP 4/2).
- B) Lower epidermal area: 1. General: Commonly olive green to grayish olive green with pale white basal disk area. 2. Lower epidermal surface: Scurfy surface that obscures colors commonly light olive green to grayish olive green (7.5GY 8/2, 7.5GY 7/2).
- C) Color of the terminal crown leaves 5GY 6/4 (predominant) and 2,5 GY 5/3 (secondary)

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Inflorescence (at anthesis)

- I. *General:* Flower composite from 80 to 144 fruit-lets borne per inflorescence of a long peduncle of approximately 21.2 cm length at the apical meristem. Individual bisexual flowers that consists of three sepals, six stamens, three stigmas and three carpels. The inflorescence is self-incompatible producing edible fruit parthenocarpically.
- II. *Texture.* Glabrous and fleshy.
- III. *Shape.* Oval with slightly raised flowers with a reddish green hue in the crown.
- IV. *Size and color.* Comparable to specimens of *Ananas comosus* L. mer. Petals color 10 YR 8/1 and 5RP 6/4, are light lilac.
- V. Sepal size: 0.4 cm, color 10 R 7/4,
- VI. Flora bract's length 2cm, serrated margin (with tiny spines); color 2,5 R 7/4.

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Fruit (at harvest)

Honey Gold Pineapple substitute specification; marked-up- version

I. *Size.* Usually has a weight between 433 and 1051 gms with average fruit of 837 gms. Fruit core's diameter: 2.45 cm.

II. *Shape.* Cylindrical or slightly conic with small and prominent fruit-lets. Medium crown with thin and semi-rigid leaves. Average height of the fruit 19-24 cm; diameter of the fruit: basal 8.92 cm; top 8.46 cm.

III. *How borne.* Fruit develop from the apical meristem of the plant on a long peduncle, usually between 19 and 24 cm length.

IV. *Color*

A) Shell: Commonly dark green (7.5GY 4/4), olive green (5.0GY 7/6), reddish (5R 3/6) and/or yellow (10YR 7/8). Fruit core color 2.5 Y 8/6.

B) Pulp: Usually light yellow (5.0Y 8/4 to 5.0Y 8/2).

V. *Brix.* Typically between 14.40 and 18.10 degrees, with an average of 16.18.

VI. *Total acid levels.* Usually between 0.67 and 1.33 gms citric acid/100 ml of juice (average 0.98).

VII. *Vitamin C content.* Regularly between 14.73 and 37.36 mg/100 ml of juice, with an average of 21.14.

20 Plant/fruit resistance /susceptibility to pests and diseases:

Moderately susceptible to *Fusarium subglutinans*. Table 2 shows a further comparison of pest and disease resistance of pineapple varieties 'Honey Gold', 'Champaka' and 'MD2'.

25 **Others**

I. *Fertility.* As any other grown up pineapple, this plant is self-compatible. This is the reason why presencepresence of sexual seeds is almost negative. The materials used for planting are slips and the non-commercial fruit crowns.

Honey Gold Pineapple substitute specification; marked-up- version

- II. *Vigor.* It is considered that the plant vigor is similar as to mother plants. It is a slow-growing plant as compared to other types of pineapple like ‘Champaka’ or the hybrid ‘MD-2’.
- III. *Yield.* Each plant estimated yield is 61 tons/ha.
- 5 IV. *Market.* Fruit will be designated to the international fruit market.
- V. *Plant use.* Fruit will be commercialized into the fresh fruit market.

Summary of special characteristics of ‘Honey Gold’ selection

- 10 The ‘Honey Gold’ plant presents differences, compared to parental line, as follows:

Plant with fewer slips: according to Chan (1995) Tainung 11 plants usually bear 7 slips while ‘Honey Gold’ plants bear 0-3 slips. Fewer slips reduce contact with the fruit, hence reducing problems caused by leaves rubbing against the fruit, accumulation of organic matter, and the concomitant staining of the fruit base. It also decreases problems of color inconsistency in the fruit that can be caused by the shade from a high number of slips.

The fruit presents higher levels of brix, citric and ascorbic acid than mother plants. As a result of the clonal selection process, the ‘Honey Gold’ pineapple has citric acid content that is about contains 112% as compared to Tainung 11 more citric acid and 14.3% 14/3% higher Brix than . Ascorbic acid levels are have been increased about 28.2% over the levels observed in the original population (original selection of ‘Tainung 11’ plants). ‘Honey Gold’ variety has also fewer spines in the leaves than Tainung 11. (Note: we are in the process of obtaining ascorbic acid specifications for Tainung 11. When these 25 levels are known, it will then be possible to calculate a percent increase in ascorbic acid for ‘Honey Gold’ vs. Tainung 11. These characteristics of the ‘Honey Gold’ plant are stable and are shown in Table 1, have been stable and it is anticipated that they will be consistently expressed in future generations. Table 3 compares the new variety ‘Honey Gold’ with several other varieties and cultivars; among others is Tainung 11, which is the 30 closest variety.

Table 1. Average of inheritance of characteristics in selection material for 'Honey Gold'

5 pineapple. F1 represents baseline data of the first generation grown from the parental
line. F2 generation was selected based on characteriscs of vigor, thorniness and number
of slips. F3 was selected based on characteristics of vigor, thorniness and number of slips,
but also on brix and ascorbic acid. F4 represents 'Honey Gold' as developed from the
parental line by mass clonal selection. The plants of F4 generation display stable
10 inheritance of reduced number of slips per plant and a 40% higher ascorbic acid content
than the baseline generation.

<u>Generation</u>	<u>Ascorbic acid mg/100 ml</u>	<u>Citric Acid g/100ml</u>	<u>Brix</u>	<u>Number of Slips</u>	<u>Fruit Weight (g)</u>
<u>F1</u>	<u>14.8</u>	<u>0.77</u>	<u>14.15</u>	<u>0-10</u>	<u>1463</u>
<u>F2</u>	<u>14.7</u>	<u>0.6</u>	<u>15.95</u>	<u>0-7</u>	<u>999</u>
<u>F3</u>	<u>21.2</u>	<u>1.0</u>	<u>15.60</u>	<u>0-3</u>	<u>757</u>
<u>F4</u>	<u>20.6</u>	<u>0.9</u>	<u>14.40</u>	<u>0-3</u>	<u>954</u>

15 **Individual plant Description**

The following is a general description of a new pineapple plant variety that was grown by vegetative propagation (cloning selection) in a nursery of Corporación de Desarrollo 20 Agrícola Del Monte S.A. (PINDECO) in Buenos Aires, Puntarenas, Costa Rica.

Plant Age: 10 months after initial propagation and 3 months after forcing.

Plant Diameter: About 77cm between opposite leaf tips.

Honey Gold Pineapple substitute specification; marked-up- version

Plant Height: 79 cm above ground surface.

Stem:

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- I) Length: 12 cm
- II) Diameter: 7.0 cm at base.

Leaves:

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- I) Number: 42
- II) Length: 75 cm at longest leaves.
- III) Width (largest leaves): At mid leaf (max) 5.2 cm; at basal disk area (max) 8.7 cm
- IV) Thickness: 1.8 mm along the axis.

15 V) Color:

- A) Upper epidermal area - Chlorophyllous area: Commonly olive green (5.0GY 6/4 and 5.GY 5/4) and reddish brown (5R 8/3).
- B) Upper epidermal area - Non-Chlorophyllous area: Commonly pale white (5Y 8/1).
- C) Lower epidermal area: Commonly from olive green to grayish olive green (7.5GY 8/2 and 7.5GY 7/2).

Inflorescence:

- 25 General: Composite flower with an inflorescence borne from a long peduncle of approximately 13 cm length at the apical meristem. The flower is composed of 136 fruitlets. Petals are white (10YR 8/1) in the proximal part, and pale lilac (5RP6/4) in the distal part.

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Comparison of 'Honey Gold' with other pineapple varieties

Honey Gold Pineapple substitute specification; marked-up- version

- There are many pineapple varieties grown world wide; however the majority of the varieties are grown for local consumption. By contrast, only two varieties comprise the vast majority of pineapple grown for commercial distribution (either for fresh or canned).
- 5 These two varieties are 'Champaka' (also known as 'Smooth Cayene') and 'MD2'. A third variety ('CO2') is also only grown for export purposes, but is not widely cultivated. Since 'Honey Gold' will be grown for export to the US, Europe, and other locations, most of the comparison data generated is made versus 'Champaka' and 'MD2'.
- 10 Table 2 depicts differences in susceptibility to pests and diseases: 'Honey Gold' and 'Champaka' are less susceptible than 'MD2' to *Thielaviopsis* sp. (common fruit rot) and *Elaphria* sp. (a moth species). Otherwise, all three varieties are similar in their response to pests and diseases.
- 15 **Table 2. Susceptibility of certain commercial pineapple varieties to pests and diseases.**
(S= susceptible, S+ = very susceptible)
- | Pest and diseases | Pineapple Variety | | |
|---|-------------------|-----|----------|
| | Honey Gold | MD2 | Champaka |
| <u>Elaphria</u> sp. | S | S+ | S |
| <u>Melybug</u>
<u>(Dysmicoccus</u>
<u>brevipes)</u> | S | S | S |
| <u>Thecla</u> (<u>Strymon</u>
<u>basilides</u>) | S | S | S |
| <u>Thielaviopsis</u>
<u>paradoxa in fruit</u>
<u>(T.V.)</u> | S | S+ | S |
| <u>Phytophtora</u>
<u>parasitica</u> | S | S | S |
| <u>Helicotylenchus</u> sp. | S | S | S |

Honey Gold Pineapple substitute specification; marked-up- version

<u>Meloidegyne sp.</u>	<u>S</u>	<u>S</u>	<u>S</u>
<u>Pratylenchus sp.</u>	<u>S</u>	<u>S</u>	<u>S</u>

The result in Table 3 show that 'Honey Gold' has a longer shelf life than 'MD2' because color development of the shell is slower and the variety is less affected by cosmetic defects such as dehydration spots, brown spots and fruit fermentation.

Table 3. Comparison of some of the post harvest characteristics of 'MD2' vs. Honey Gold. (*Shell color was evaluated on a scale of 12-5 with 1= green, 5= completely yellow.
** dah= days after harvest)

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<u>Variety</u>	<u>Shell color development*</u>			<u>External Appearance (at days after harvest)</u>					
	<u>Days after harvest</u>			<u>Dehydration spot (%)</u>	<u>Brown Spot (%)</u>		<u>Fruit Fermentation (%)</u>		
	<u>0</u>	<u>15</u>	<u>21</u>	<u>15</u> <u>dah**</u>	<u>21 dah</u>	<u>15 dah</u>	<u>21 dah</u>	<u>15 dah</u>	<u>21 dah</u>
<u>MD2</u>	<u>2</u>	<u>3.1</u>	<u>5.0</u>	<u>23.0</u>	<u>56.0</u>	<u>3.0</u>	<u>7.1</u>	<u>0</u>	<u>9.0</u>
<u>Honey Gold</u>	<u>2</u>	<u>2.9</u>	<u>2.8</u>	<u>2.5</u>	<u>2.1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>3.5</u>

15 Table 4 compares the characteristics of export vs. local varieties. Information in this table

was obtained from Del Monte data and from literature. This table also gives comparison between 'Honey Gold' and the closest variety Tainung 11. The characteristics of 'Honey Gold' differ from those of other varieties in the following ways:

1. Slips. 'Honey Gold', 'MD2', 'CO2' and 'Red Spanish' have significantly fewer slips than the other varieties.

Honey Gold Pineapple substitute specification; marked-up- version

2. Fruit weight. The fruit weight of 'Honey Gold' tends to be significantly less than that of the other varieties commonly grown commercially for the export markets.
3. Ascorbic acid. The ascorbic acid content of 'Honey Gold' is intermediate between the low ascorbic acid producing varieties ('Champaka' and 'Tainung') and the high ascorbic acid producing varieties ('MD2' and 'CO2').
4. Citric acid. The citric acid content of 'Honey Gold' is clearly the highest among all the varieties for which data is available.
5. Brix. The sugar content (measured as degrees Brix) of 'Honey Gold' is also very high, but almost all pineapple except 'Red Spanish', 'Perola' and 'Queen' have very high brix.
- 10 6. Age to forcing. 'Honey Gold' is relatively slow growing, but data is not available for most varieties in the table.
- 15 7. Spininess. Presence of spines on leaves is a characteristic that is commonly used to differentiate among pineapple varieties. 'Honey Gold' is among the varieties that rarely have spines. By contrast, spines are common on the leaves of 'Sarawak', 'Mauritius', 'Red Spanish', 'Tainung 11', 'Perola' and 'Queen'.
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Table 4 Comparative characteristics of several varieties and cultivars of pineapple

Variety/Cultivar	Number of Slips		Fruit weight (gr)		Ascorbic acid (mg/100ml)		Citric acid (gr/100ml)		Brix	
	Average	Range	Average	Range	Average	Range	Average	Range	Average	Range
MD-2 ^a	1.2	0-3	1820	1070 - 2560	53.06	37.0 - 69.0	0.6 - 0.84	0.36 - 0.84	15.05	12.9 - 17.2
Honey Gold	1.5	0-3	1033	450-1678	21.14	14.7 - 3-	0.98	0.67 - 1.33	16.18	14.4-

Honey Gold Pineapple substitute specification; marked-up- version

					<u>37.3</u> <u>6</u>				<u>18.</u> <u>1</u>	
<u>Champaka</u> <u>F153</u> ⁽²⁾	<u>1.1</u>		<u>1710</u>	<u>420-</u> <u>3010</u>	<u>12.91</u>	<u>8.10-</u> <u>17.7</u> <u>2</u>	<u>0.72</u>	<u>0.54-</u> <u>0.90</u>	<u>14.33</u>	<u>11.</u> <u>6-</u> <u>17.</u> <u>0</u>
<u>Champaka</u> <u>F152</u> ⁽³⁾	<u>1.5</u>		<u>2328</u>				<u>0.73</u>		<u>14.97</u>	
<u>CO-2</u> ⁽⁴⁾		<u>2-3</u>	<u>2059</u>	<u>1297</u> = <u>2590</u>		<u>30.8-</u> <u>55.5</u> <u>0</u>		<u>0.42-</u> <u>0.91</u>	<u>15.</u> <u>0-</u> <u>16.</u> <u>7</u>	
<u>Singapore</u> <u>Spanish</u> ⁽⁵⁾		<u>2-12</u>	<u>1000</u>					<u>0.50-</u> <u>0.60</u>	<u>10.</u> <u>0-</u> <u>12.</u> <u>0</u>	
<u>Sarawak</u> ⁽⁵⁾	<u>0</u>			<u>2000</u> = <u>4000</u>				<u>0.30-</u> <u>0.65</u>	<u>14.</u> <u>0-</u> <u>17.</u> <u>0</u>	
<u>Mauritius</u> ⁽⁵⁾	<u>0</u>			<u>500-</u> <u>1500</u>				<u>0.40-</u> <u>0.60</u>	<u>15.</u> <u>0-</u> <u>17.</u> <u>0</u>	
<u>Josephine</u> ⁽⁶⁾				<u>1100</u> = <u>1300</u>					<u>17.</u> <u>0-</u> <u>22.</u> <u>0</u>	
<u>Scarlett</u> ⁽⁶⁾				<u>1400</u> = <u>2000</u>					<u>15.</u> <u>0-</u> <u>18.</u> <u>0</u>	
<u>Red</u>		<u>1-3</u>		<u>1200</u>					<u>12</u>	

Honey Gold Pineapple substitute specification; marked-up- version

<u>Spanish</u> ⁽⁶⁾				= <u>2000</u>					
<u>Tainung</u> <u>11</u> ⁽⁷⁾	<u>6.9</u>		<u>991</u>	<u>733-</u> <u>1269</u>		<u>10.4</u>	<u>0.50</u>	<u>0.40-</u>	<u>14</u>
						<u>0-</u> <u>18.5</u> <u>0</u>		<u>0.60</u>	
<u>Imperial</u> ⁽⁸⁾	<u>9.0</u>		<u>1792</u>				<u>0.62</u>		<u>15.8</u>
<u>Perolera</u> ⁽⁹⁾		<u>8-10</u>	<u>1800</u>				<u>0.64</u>		<u>13.1</u>
<u>Perolera_o</u>		<u>10-</u>		<u>1000</u>					<u>14-</u>
<u>Pemambu</u> <u>co</u> ⁽¹⁰⁾		<u>15</u>		= <u>1500</u>					<u>16</u>
<u>Primavera</u> <u>10</u>		<u>7-10</u>	<u>1300</u>				<u>0.51</u>		<u>13</u>
<u>Queen</u> ⁽¹¹⁾	<u>4.0</u>			<u>500-</u> <u>1000</u>	<u>26.00</u>		<u>0.56</u>		<u>14-</u> <u>16</u>

1) Pindeco's historical data base and monthly research report April 2001;

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2) Pindeco's fruit historical data base, Pindeco's forcing plant weight data base.

3) Research report PRI No 63. July 1969. Tables 16, 21 and 29.

5 4) Plant patent 8,863

5) Wee, Y.C. 1972. Some common pineapple cultivars of west Malaysia. Malays.

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7) Chang, Ching-Chyn, 1995 Tainung No 13 Pineapple. Jour. Agric. Res. China

10 44(2): 287-296.

8) Pinto da Cunha et al. O abacaxizeiro. Pineapple News Issue No 10 May 2003.

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CLAIM

What is claimed is:

- 10 1. A new and distinct variety of *Ananas comosus* plant named “Honey Gold” as shown
and described herein.

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ABSTRACT

A new pineapple variety named “Honey Gold” is provided. High levels of brix, total sugars, citric acid and ascorbic acid characterize the variety. The new variety bears 0-3

10 slips.